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29 November 2011

Mr. Chris Villarreal
Task Order Monitor
U.S. Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Subject: **Field Investigation Summary Report, October 2011**
R&H Oil/Tropicana Energy Superfund Site
Remedial Investigation/Feasibility Study Oversight
U.S. Environmental Protection Agency Region 6
Remedial Action Contract 2
Contract: EP-W-06-004
Task Order: 0074-RSBD-06MB

Dear Mr. Villarreal:

EA Engineering, Science, and Technology, Inc. (EA) is pleased to submit the Field Investigation Summary Report for the ground water investigation activities overseen by EA in October 2011 at the R&H Oil/Tropicana Energy Superfund Site. An electronic copy of this document was transmitted via e-mail on 29 November 2011. We are providing two original hard copies and one electronic copy on compact disc (CD). One hard copy and one electronic copy on CD were also delivered to the Texas Commission on Environmental Quality (TCEQ).

If you have any questions regarding this submittal, please call me at (972) 459-5017.

Sincerely,

Ted Telisak, P.E.
Project Manager

Enclosure

cc: Michael Pheeny, EPA Contracting Officer (letter only)
Latrice Williams, EPA Contract Specialist (letter only)
Rena McClurg, EPA Project Officer (letter only)
Marilyn Long, TCEQ
Tim Startz, EA Program Manager (letter only via e-mail)
Fritz Meyer, EA Director of Federal Programs (letter only via e-mail)
Brian McLaughlin, EA Engineering (letter only via e-mail)
File

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TRANSMITTAL OF DOCUMENTS FOR ACCEPTANCE BY EPA		DATE: 29 November 2011	TRANSMITTAL NO. 0005
TO: Mr. Chris Villarreal U.S. Environmental Protection Agency Region 6		FROM: Ted Telisak, P.E. EA Engineering, Science, and Technology, Inc.	XX New Transmittal ☐ Re-submittal of Transmittal No. _____
SUBTASK NO.	**DELIVERABLE**	**NO. OF COPIES**	**REMARKS**
3	Field Investigation Summary Report, October 2011 R&H Oil Tropicana Energy Superfund Site Remedial Investigation/Feasibility Study Oversight	2 Hard copies; 1 Electronic copy on Compact Disk; and 1 Electronic copy via E-Mail	
ACCEPTANCE ACTION			
DOCUMENTS FOUND ACCEPTABLE (LIST BY SUBTASK NO.)		NAME/TITLE/SIGNATURE OF REVIEWER DATE	

FIELD INVESTIGATION SUMMARY REPORT
OCTOBER 2011
REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) OVERSIGHT
R&H OIL/TROPICANA ENERGY SUPERFUND SITE, SAN ANTONIO, TEXAS

This Field Investigation Summary Report summarizes activities at the R&H Oil/Tropicana Energy Superfund Site (the Site) on 10 and 11 October 2011. It includes an Introduction followed by discussions of health and safety issues, weather conditions, site activities, and a list of references.

INTRODUCTION

Under the direction of the U.S. Environmental Protection Agency (EPA), EA Engineering, Science, and Technology, Inc. (EA) oversaw ground water investigatory activities conducted by the Potentially Responsible Parties' consultant, Pastor, Behling, & Wheeler, LLC (PBW), at the Site.

Participants included:

- Mr. Chris Villarreal, EPA Task Order Monitor
- Mr. Ted Telisak, EA Project Manager
- Mr. Duane Thomas, EA Geologist, Site Manager/Site Health and Safety Officer.

EA performed field activities in accordance with the following EPA-approved plans:

- RI/FS Oversight Work Plan (EA 2011a)
- Health and Safety Plan (EA 2011b).

This Field Activity Report reports on the following field activities:

- Drilling and installation of soil vapor/sub slab vapor sample locations
- Water sampling from installed sample points.

HEALTH AND SAFETY

EA was excluded from the daily tailgate safety briefings involving other field crews working at the site. EA conducted its own daily health and safety review at the beginning of each work day.

WEATHER CONDITIONS

On10 and 11 October 2011, high temperatures ranged from 86 to 88 degrees Fahrenheit. The skies were mostly sunny with a 10 percent chance of precipitation. Winds were light and varied in direction.

SITE ACTIVITIES

On 10 and 11 October 2011, EA witnessed the beginning of PBW's soil vapor/sub slab vapor intrusion sampling investigation. The following paragraphs summarize events noted in the field. More details may be found in the Daily Field Reports in Attachment 1, and in the Field Logbook in Attachment 2. Photographs taken at the site may be found in Attachment 3. A Site Map including sample locations may be found in Attachment 4.

Well Drilling and Soil Boring

PBW initiated activities with the drilling and installation of sample tubing in the Old Lab Building. PBW drilled through the foundation pad using a hammer drill with a 3/8-inch (in) bit and passed poly tubing through the hole to the space below the slab. After poly tubing was inserted into the hole in the slab, a bentonite clay seal was placed around the hole. Sample locations SS-1, SS-2, and SS-3 were installed using this method.

After completing installation of the sub slab sample locations, PBW began installation of the soil gas vapor sample points using a Geoprobe track rig with 2-in rods. Each boring was placed 4 feet (ft) from the existing monitoring well and was named after the adjacent monitoring well. After the rods were extracted, a 6-in stainless steel mesh screen and poly tubing were inserted into the hole. Void space between the screen and the tubing was filled with coarse filter pack sand. Bentonite was used to fill void space up to ground surface and was hydrated with potable water. Nine sample points were completed using this method and were left overnight to equilibrate in preparation for sampling on the following day.

EA witnessed the installation of the following samples using the above described installation method:

MW-12
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-20

Well Sampling

EA witnessed PBW's sampling of light non-aqueous phase liquid (LNAPL) in MW-5, MW-12, MW-14, and MW-15. The samples were collected using a 2-in polyethylene bailer. Product thickness was gauged and recorded using a Solinist interface probe. PBW submitted the samples for analysis of chemical constituents, physical properties, and chemical fingerprint.

EA oversaw sampling activities associated with the Old Lab Building. Prior to sampling at the three sampling points, PBW used fresh bentonite to replace seals affected by desiccation cracks which developed as the bentonite seal lost moisture. PBW used Summa canisters equipped with five-minute regulators to sample the sub-slab locations and began testing the holes with a helium shroud. EA relayed concerns to the EPA regarding the methodology of extracting and injecting

sampled air into a Tedlar® bag for testing. The syringe used at sample points SS-2 and SS-3 was not capped nor did it have a valve on the end to ensure no air could escape from the open end of the syringe. At the direction of EPA, a stop cock was placed on the end of the syringe to prevent loss of air while collecting the sample at SS-1.

After completion of the sub slab vapor sampling, PBW began soil gas sampling at MW-12. PBW initially had difficulty getting the 30 percent helium atmosphere in the helium shroud due to the uneven soil. PBW adjusted the bentonite around the hole to correct the problem. PBW did not have issues with bore hole leaking or inadequate helium shrouds at the remaining sampling locations. PBW collected ten samples, including one duplicate sample at MW-13.

Plan Deviations

The following is a summary of Field Sampling Plan (PBW 2010) deviations noted by EA personnel during oversight of PBW. Additional information can be found in the Daily Field Reports and Field Logbook (Attachments 1 and 2, respectively).

- Sample point MW-15 was installed at 4.5 ft below ground surface (bgs), whereas the Work Plan called for all borings to be from 5–7 ft bgs. A highly-impacted waste soil was encountered at 4.5 ft, and it would not permit the bore hole to stay open beyond that depth.

REFERENCES

EA Engineering Science and Technology, Inc. (EA). 2011a. Remedial Investigation / Feasibility Study Oversight Work Plan. R&H Oil/Tropicana Energy Superfund Site. San Antonio, Bexar County, Texas. April.

EA. 2011b. Health and Safety Plan. R&H Oil/Tropicana Energy Superfund Site. San Antonio, Bexar County, Texas. May.

Pastor, Behling & Wheeler, LLC. 2010. Field Sampling Plan. R&H Oil/Tropicana Energy Superfund Site. San Antonio, Bexar County, Texas. September.

ATTACHMENT 1

DAILY FIELD REPORTS

DAILY FIELD ACTIVITIES SUMMARY REPORT			
PROJECT NAME: R&H Oil/Tropicana Energy Site, San Antonio, Texas			
Date: 10/10/11	Shift Beginning: 08:15 hours		Shift Ending: 15:50 hours
RAC II Contract No.: EP-W-06-004			Task Order No.: 0074
EPA Region 6 TOM: Chris Villarreal			Project Manager: Ted Telisak
Design Manager: N/A			Site Scientist: Duane Thomas
Design Engineer: N/A			Site Engineer: N/A
Personnel on site	**Name**	**Affiliation**	**Reason for being on site**
EA:	Duane Thomas	EA	Soil Vapor/Sub Slab Vapor Investigation Oversight
Subcontractors:	N/A		
Other:	Tim Jennings Matt Sutherland	PBW PBW	Environmental Consultant Junior Engineer

Work Performed

Pastor, Behling & Wheeler, LLC (PBW) is the environmental consultant that is conducting the remedial investigation field activities. EA is providing oversight of field activities on behalf of EPA.

EA oversaw PBW as they began their soil vapor/sub slab vapor intrusion sampling investigation. The day's activities began with the drilling and installation of sample tubing in the "old lab" building. PBW used a hammer drill with a 3/8" bit to drill through the foundation pad. Poly tubing was passed through the hole to the space below the slab. The thickness of the pad was about 7 inches. After the tube was inserted into the hole in the slab, a bentonite clay seal was placed around the hole and poly tubing. Three sample locations were installed with this method. The sampling locations were SS-1 through SS-3.

After completing the sub slab sample locations, PBW began the installation of the soil gas vapor sample points. The sample locations were named after the monitoring well the borings were placed next to. Each boring was placed 4 feet from the existing monitoring well.

The borings were completed by a Geoprobe track rig using two inch rods. The Geoprobe pushed the rods to 6 feet using the hydraulic hammer. After the rods were extracted, a 6 inch stainless steel mesh screen point was attached to the end of a 3/8" poly tube. The point and tubing were placed in the hole to the total depth. A 1-foot filter pack of coarse grain sand was placed around the sample point. The hole was then filled in with granular bentonite well seal to the ground surface. The bentonite was hydrated with water. Nine sample points were done with this method. The locations were MW's 12, 14, 13, 15, 16, 17, 19, 18 and 20.

PBW deviated from their work plan by installing MW-15 sample point at 4.5' bgs. The work plan called for all borings to be from 5-7 feet bgs. A highly impacted waste soil was encountered at 4.5' and it would not permit the bore hole to stay open beyond that depth.

All the sample points were left overnight to "equilibrate" and will be sampled the following day, 10/11/11.

After completing the soil vapor sample point installation, PBW began sampling of LNAPL in MW-14, MW-12, MW-15 and MW-5. The sample was collected using a 2-inch polyethylene bailer. Product thickness was gauged and recorded using a Solinst interface probe. PBW submitted the samples for analysis of chemical constituents, physical properties and chemical fingerprint.

Anticipated Activities for the Following Day

Sampling of all soil gas vapor and sub-slab vapor locations installed on 10/10/11. The storm water in the ditch north of the site may also be sampled.

Report prepared by (name and date)

Duane Thomas 10/11/11

DAILY FIELD ACTIVITIES SUMMARY REPORT			
PROJECT NAME: R&H Oil/Tropicana Energy Site, San Antonio, Texas			
Date: 10/11/11	Shift Beginning: 08:00 hours		Shift Ending: 14:00hours
RAC II Contract No.: EP-W-06-004			Task Order No.: 0074
EPA Region 6 TOM: Chris Villarreal			Project Manager: Ted Telisak
Design Manager: N/A			Site Scientist: Duane Thomas
Design Engineer: N/A			Site Engineer: N/A
Personnel on site	**Name**	**Affiliation**	**Reason for being on site**
EA:	Duane Thomas	EA	Soil vapor/Sub Slab Vapor Investigation
Subcontractors:	N/A		
Other:	Tim Nickles Matt Sutherland Eric Pastor John Brayton	PBW PBW PBW PBW	Environmental Consultant Junior Engineer Environmental Consultant Environmental Technician

Work Performed

Pastor, Behling & Wheeler, LLC (PBW) is the environmental consultant that is conducting the remedial investigation field activities. EA is providing oversight of field activities on behalf of EPA.

EA oversaw PBW as they continued their soil vapor/sub slab vapor intrusion sampling investigation. The day's activities began with the sampling of the points in the "old lab" building. PBW had noticed the bentonite seal around all three sample points had dried out and cracked. PBW replaced the seals with fresh bentonite prior to leak testing. PBW used summa canisters with a 5 minute regulator to sample the sub-slab locations.

PBW began leak testing the holes with a helium shroud at 0838 at point SS-2. PBW used a portable Dielectric Helium/Hydrogen meter to test the purge air for helium intrusion. PBW used a 75cc syringe to extract approximately 50cc's at a time of air from the sample line and injected this air into a tedlar bag for testing. EA relayed concerns about this method to the EPA. The syringe was not capped nor had a valve on the end ensuring no air could escape from the open end of the syringe. Sample points SS-2 and SS-3 were done in this manner. EA also questioned if 100cc's of extracted air was sufficient volume to test with the helium meter. PBW contended it was. EA noticed that the 100cc volume was quickly consumed by the meter. In these instances, PBW attached the meter directly to the sample hose. PBW installed a stop cock valve on the end of the syringe to prevent gas escape.

After completion of the sub slab vapor sampling, PBW began soil gas sampling at MW-12. PBW did struggle initially getting the 30% helium atmosphere in the helium shroud due to the uneven soil. PBW adjusted the bentonite around the hole and managed to solve the problem. PBW did not have issues with bore hole leaking or helium shroud issues at the remaining sampling locations. PBW tested nine wells in total with one duplicate sample at MW-13.

PBW had no deviations from their work plan on this day.

Anticipated Activities for the Following Day

Groundwater sampling of monitoring wells.

Report prepared by (name and date)

Duane Thomas 10/11/11

ATTACHMENT 2

FIELD LOGBOOK

San Antonio TX R&H 0:1 06/07/11

MW-5 (NAPL Thickness 0.05' (6 well)

1440 Pump on

* Photo: sampling set up on MW-5 PT adj o/c

1430 MW-05 SAMPLE TIME

1436 MW-05 sampling complete

1437 MoB to MW-3 (NAPL impacted well) NAPL Thickness: 18.95 - 18.24

1445 Begin set up on MW-3

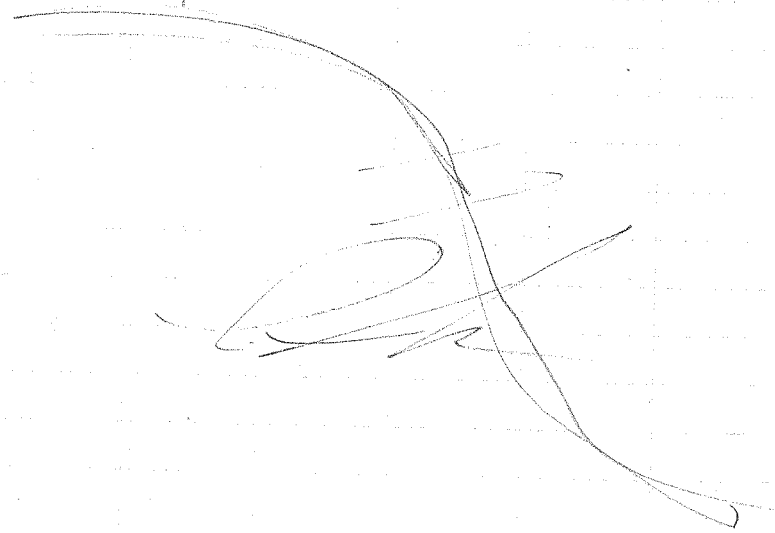
1448 Pump on

* Photo Sampling of MW-3

1530 SAMPLE TIME for MW-3

1535 Sampling complete for MW-3

1550 Depart Site



San Antonio, TX 10/10/11

0430 Depart for office

0445 Arrive at office

0530 Depart office for San Antonio

0830 Arrive in San Antonio, on site

WEATHER: Mostly sunny today, high of 86°F. Chance of rain 10% Winds N-NE at 5-10mph

PLAN FOR THE DAY: Oversight of PBW sampling activities.

0835 Begin oversight of Tim J PBW sub slab investigation at Old Lab/office

* Photo: Hammer drill at sampling point
- Hole is ± 3/8"
- air sample will be 5 min grab sample
- hole sealed with dentonite

PBW STAFF:
Tim Jennings
Matt Sutherland

Porter Drillers on site to push depth of sampling points with Geoprobe

* Photo: Sealed Sample location SS-3
- Sample points ± 5 foot from building walls

San Antonio, TX 10/10/11

0850 Mob to MW-12 location to begin push to depth

*PBW plan today is to push all the sample points to depth, seal + leave to dry overnight.

*Photo: Push at MW-12

- Polyethelene tubing used with stainless screen at bottom. Tubing + screen placed at 6'. 1" coarse filter pack sand placed above point. Well seal used (bent. well seal) above sand hydrated @ every foot. Well sealed to ground surface.

0910 Mob to MW-14

*Photo: Bentonite sealing + hydration

*Photo: MW-14 completed sample point

0925 Mob to MW-13

*Photo: push at MW-13

At 4'2 feet boring started filling with oil.

PBW will set tubing at 4.5' bgs.

*Photo: setting tubing

- dry bent. well seal ≈ 1' above sand before hydration

San Antonio, TX 10/10/11

0934 Mob to MW-15

*Photo: location MW-15

- hole collapsed after 1st push, hole re-pushed

Depth: 6'

0948 Mob to MW-16

- PBW plans to let sample locations "equilibrate overnight so purging the location won't be necessary". Tubing lines will be purged tomorrow.

*Photo: location, MW-16

- standing water near location

Depth: 6'

- Hole collapsed after 1st push

- sampler will be set in the rod with disposable tip.

*Photo setting tubing + filter sand

1000 EPA Onsite (C.V)

1008 Mob to MW-17

*Photo: MW-17

Depth ca

Mob to MW-9 AT 10/10/11

*Photo: location MW-19

Depth: 6'

San Antonio, TX 10/10/11

1026 Mob to MW-20
* Photo: location MW-20
* Photo: finished sample point
Depth 6'
1048 Mob to MW-18
* Photo: location MW-18
4' impacted saturated soil
PBW w/ set up sampler tubing at 4' with sand pack to 3'
- ~~PBW sets back up~~. PBW sets new boring
* Photo: ~~Backup~~ location 2 for MW-20
- original boring plugged with bentonite pellets
- Boring 2 stayed open.
* EPA suggests to PBW gets surface water sampling due to water in drainage ditches.
1115 Complete sample tube install.
1120-1240 Lunch
1240 Begin prep for NAPL sampling
1300 PBW been given access by railroad company UP to collect storm water sample from ditches bordering property to North

San Antonio, TX 10/10/11

1320 PBW begins NAPL sampling
- PBW will sample NAPL with bailer
24.20 1.2' product
25.40
MW-14
* Photo: NAPL Sample from MW-14
1335 Mob to MW-12
DTP: 23.35
DTW: 25.65
- NOT MEASURED FROM N side of casing
* Photo: NAPL from MW-12
1350 Complete NAPL samples
1355 Mob to MW-15
DTP: 23.85
DTW: 27.55
- NAPL different consistency, thicker more oily
* Photo: NAPL from MW-15
1415 Mob to MW-5
DTP: 21.02
DTW: 22.82
* Photo: NAPL for MW-5
1430 Complete NAPL Sampling

San Antonio, TX 10/10/11

* EA + EPA has concerns about the well seals and Helium shroud PBW plans to vacuum on 10/11. Trying to seal the shroud to the sandy soil could open the door for Helium to short circuit thru the soil.

1500 Depart Site for San Antonio

San Antonio, TX 6/21/11

0730 Depart Site

0745 Arrive at Site

WEATHER: Mostly sunny today high approx 88°F. Winds will be light and variable.

PLAN FOR THE DAY: Continue oversight of PBW's soil gas & slab vapor investigation. Continue other oversight activities as directed by EPA.

ONSITE: PBW Eric Pastor
Tim Jennings
Matt Sutherland
EA Duane Thomas
EPA Chris V.

0820 PBW says sent. seal around some wells has dried out. Will see integrity during He testing.

0830 PBW begin prep for testing
- He shroud is tupperware containers

* Photo: He test at SS-1

* SS-1 thru 3 sent. seals dried & cracked replaced right before Helium testing

San Antonio, TX 10/11/11

0838 Begin 5 min test
Test Vac -30 in can
Finish Vac -5
0843 Finish SS-1
Helium detector: Dielectric Helium Meter
0845 Begin Setup on SS-2
* Syringe used to pull helium has no one way valve. Helium can escape from valve or syringe opening during transfer from in line sample port to collar bag.
* VOC's not tested for from sample point with PID. Can be a good field data point.
* Photo Set up at SS-2
Test Vac -29
Final Vac -5
*PBW Contends that the line purge is accomplished when they pull the sample from the in line sample port. They contend the 100cc volume is sufficient for both purposes.
0907 PBW having difficulty with vacuum integrity of fittings surrounding regulator of SS-3 can. Refitted with new can
Test Vac = -26
Final Vac = -5

San Antonio, TX 10/11/11

PBW will sample (Test) He from sample point
- direct sample point He test shows less than 2000 ppm
* PBW Places Stop Cock valve on syringe
0930 Begin set up on MW-2
*Photo: Set up on MW-2
* PBW having difficulty maintaining 30% Helium atmosphere in shroud
- No Helium leak from borehole
Test Vac -26
Final Vac -5
0945 Mob to MW-13 14
*Photo: Set up on MW-13 14
1850 ppm on He test at 4/6 Zs in shroud
Test Vac: -29 inches Hg
Final Vac: -19 inches Hg
* Can will not pull in air past 9 in Hg
PBW concludes test
- limited sample volume
1002 Set up on MW-13
* Photo Set up on MW-13

San Antonio, TX 10/11/11

MW-13 ip DUP
Start He 35%
Test Vac: 30+ in Hg on both canisters
Final Vac: -5 mm Hg
Test He: 0 ppm
1025 Mob to MW-15
* Photo: Set up on MW-15
Start He 44.5% Start 445 ppm
End 800 ppm.
Test Vac -29 in Hg
Final Vac 5 in Hg
1041 Mob to MW-16
* Photo: Set up on MW-16
Start He: 38.6% Ted bag: 0 ppm
Test Vac: -28.5 in Hg
Final Vac: -23.0 in Hg
- Boring tight. Not much vacuum
1053 Mob to MW-17
Start He 38.7% Ted Bag
Test Vac: -29. in Hg
Final Vac: -5 in Hg
1111 Mob to MW-19
Start He: 43% Ted Bag 0
Test Vac: -30 in Hg
Final Vac: -5 in Hg

San Antonio, TX 10/11/11

1130 Mob to MW-20
Test He 42.8% Ted Bag: 0 ppm
Test Vac: -25 in Hg
Final Vac: -6 psi
1142 Mob to MW 18
Test He: 48.2 Ted Bag: 0 ppm
Test Vac: -26 in Hg
Final Vac -2 in Hg
1157 Complete Soil Vapor Sampling
1200-1300 Lunch
1300 Begin prep for surface water sampling.
PBW will collect 5 surface water samples from the ditch area to the east and north
1327 ERA (Chris V.) says he can cover the additional sampling being done by PBW.
1340 Depart Site

ATTACHMENT 3

PHOTOGRAPHS

Photograph No. 1 (October 2011)
Description: Drilling and installation of sub slab soil boring at SS-3.

Photograph No. 2 (October 2011)
Description: Completed installation of soil boring and bentonite clay seal at SS-3.

Photograph No. 3 (October 2011)
Description: Installation of soil gas vapor soil boring at MW-6.

Photograph No. 4 (October 2011)
Description: Poly tubing surrounded with layer of coarse filter pack sand followed by a layer of bentonite to ground surface at MW-12.

Photograph No. 5 (October 2011)
Description: Completed installation of soil boring and bentonite clay seal at MW-4.

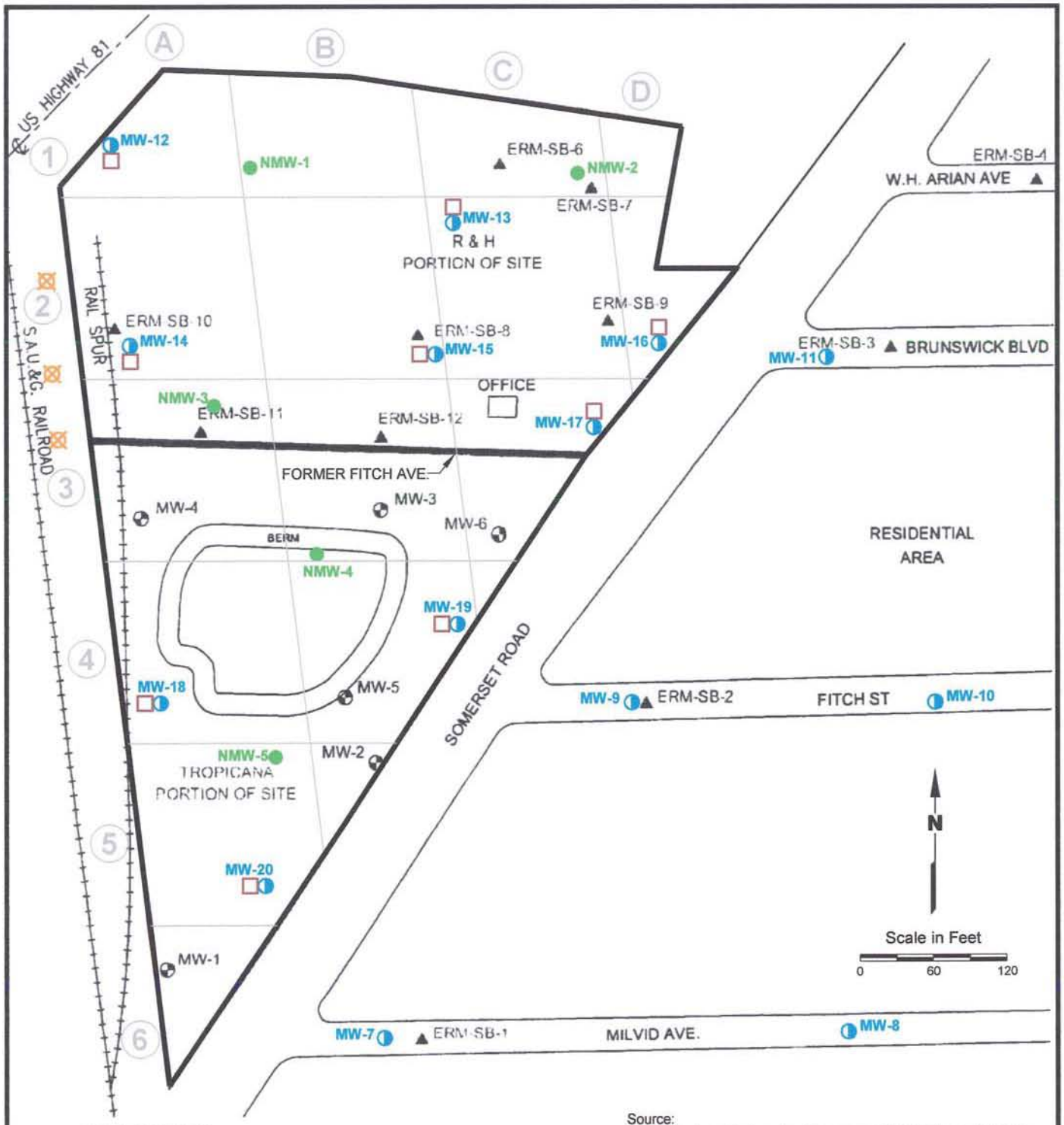
Photograph No. 6 (October 2011)
Description: Sampling of sub slab locations with Summa canisters at SS-3.

Photograph No. 7 (October 2011)
Description: Soil vapor gas sampling with Summa canisters at MW-12.

ATTACHMENT 4

WELL LOCATION MAP

from PRP Field Sampling Plan by Pastor, Behling & Wheeler, LLC



EXPLANATION

- Approximate Site Boundary
- ▲ Previous Soil Boring/Temporary Well Location
- Existing Groundwater Monitoring Well Location
- RI/FS Soil Boring/Groundwater Monitoring Well Location
- RI/FS Soil Boring/NAPL Monitoring Well Location
- RI/FS Soil Gas Sample Location
- Ditch Surface Water Sample Location (upstream sample locations to be determined at time of sampling).

Notes:
1. All locations are approximate.
2. RI/FS locations subject to modification based on field conditions.
2. Test pit locations will be determined based on soil boring and monitoring well data, and thus are not shown on this figure.

Source:
Base map from Engineering Management Support, Inc. Site Map dated September 2004.

R&H OIL/TROPICANA ENERGY SITE

Figure 3

PROPOSED RI/FS SAMPLE LOCATIONS

PROJECT: 1589	BY: ZGK	REVISIONS
DATE: SEPT., 2010	CHECKED: EFP	

PASTOR, BEHLING & WHEELER, LLC
CONSULTING ENGINEERS AND SCIENTISTS